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# Five New Species of *Richterago* (Compositae, Mutisieae): A Genus Endemic to Brazil

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**ABSTRACT.** *Richterago*, a genus endemic to Brazil, re-established from *Gochnatia* Kunth, has until now been comprised of 10 species with a center of diversity in the Espinhaço Range, Minas Gerais, Brazil. Five new species of *Richterago*, *R. caulescens*, *R. conduplicata*, *R. elegans*, *R. lanata*, and *R. riparia*, are described and illustrated, bringing the total in the genus to 17. All species are endemic to the campo rupestre vegetation and are characterized by their habit and leaf morphology. *Richterago caulescens* and *R. elegans* are subshrubs, chamaephytes with alternate leaves, the former with rose-colored disc florets; the other new species are herbs, hemicryptophytes with rosulate leaves. *Richterago conduplicata* is distinguished by its obovate and conduplicate leaves; *R. lanata* has oblanceolate leaves that are coriaceous, densely white-lanate, and *R. riparia* has oblanceolate to spatulate leaves that are chartaceous and glabrescent. Commentaries concerning other morphological features of the new species and their ecology and geographical distribution are presented.

**Key words:** Brazil, Compositae, Mutisieae, *Richterago*.

*Richterago* Kuntze (Compositae, Mutisieae) has recently been recircumscribed to include species formerly described in *Actinoseris* (Endlicher) Cabrera and *Gochnatia* sect. *Discoseris* Cabrera (Roque & Pirani, in press).

*Actinoseris* contains radiate species and *Gochnatia* sect. *Discoseris* has discoid species, but here these are treated as congeneric, under the name *Richterago*, which in effect returns to the genus concept first employed by Lessing (1830) and goes against the generic concepts more recently proposed by Cabrera (1970, 1971).

*Richterago* is closely related to *Gochnatia* Kunth and *Ianthopappus* Roque & H. J. N. Hind (Roque & Hind, 2001), due to anther appendages that are apiculate to acuminate. But *Richterago* is distinguished from them by a habit predominantly herbaceous to subshrubby, leaves rosulate or alternate, venation pinnate, capitula homogamous and discoid

or heterogamous and radiate, and especially by the pappus, which is uniseriate, with 25 to 42 bristles that are basally united into a fleshy straw-colored ring (Table 1).

Species of *Gochnatia* are commonly trees and shrubs, with leaf venation actinodromous to pinnate, capitula homogamous and discoid and the pappus biseriate, with about 50 bristles that are free; *Ianthopappus* has a subshrubby habit, with leaves actinodromous, capitula heterogamous and radiate, and pappus 3-seriate, with approximately 130 bristles that are free and characteristically purple-colored in contrast to the straw-colored bristles of the former two taxa. *Ianthopappus* was recently described by Roque and Hind (2001). It comprises one species, *I. corymbosus* (Lessing) Roque & D. J. N. Hind, which has a southern extra tropical distribution in the extreme south of Brazil, extending into Argentina (Corrientes) and Uruguay (Artigas).

*Richterago* is endemic to central-southern Brazil and has 10 accepted species; five are proposed in this paper, bringing the total to 15. The center of diversity of this genus is in the Espinhaço Range, in Minas Gerais State, Brazil (Roque & Pirani, 1997).

**1. *Richterago caulescens* Roque, sp. nov. TYPE:** Brazil. Minas Gerais: Santana do Riacho, Serra do Cipó, km 129 da estrada Belo Horizonte–Conceição do Mato Dentro, 06 Oct. 1981, I. Cordeiro, M. L. Kawasaki, J. R. Pirani & A. Furlan CFSC 7535 (holotype, SPF; isotypes, BHC, F, K, MBM, NY, RB, UEC). Figure 1A–G.

Primo aspectu ad *Richteragam polyphyllam* valde accedit, sed foliis glabris, pedunculo brevi, capitulo radiato distincta.

Subshrubs to 50 cm, chamaephytes. Leaves alternate, coriaceous, plane, elliptic, oblong to obovate, 1.5–3 × 0.4–1.5 cm, mucronate, entire to dentate, attenuate, puberulent when young, later glabrous, trichomes glandular-stipitate, camptodromous, reticulate, subsessile, petiole 1–3 mm long, truncate, lanate. Inflorescence peduncle sim-



Table 1. Comparison of *Richterago* Kuntze with *Ianthopappus* Roque & D. J. N. Hind and *Gochnatia* Kunth based on diagnostic morphological studies.

	<i>Ianthopappus</i> <sup>1</sup>	<i>Gochnatia</i> s.str.* (Cabrera 1971)	<i>Richterago</i> <sup>2</sup>
Habit	Subshrub	Trees or shrubs**	Subshrubs*** or herbs
Leaf venation	Actinodromous	Actinodromous to pinnate	Pinnate
Pappus	3-seriate	2-seriate	1-seriate
Number of pappus setae	Ca. 130	Ca. 50	25 to 42
Pappus setae	Free	Free	United at base into fleshy ring
Pappus coloration	Purplish	Straw	Straw

\* *Gochnatia* Kunth excluding *Gochnatia* sect. *Discoseris* Cabrera.

\*\* Woody stem and shoots.

\*\*\* Stem unbranched, woody only at the base.

<sup>1</sup> Roque & Hind (2001).

<sup>2</sup> Roque & Pirani (in press).

ple or branched, 2.5–6 cm long, aphyllous, white-tomentose to glabrescent, bracteate; bracts ovate-lanceolate, ca. 5 × 0.2 mm, white-tomentose. Capitula heterogamous, radiate 1 to 12, solitary or forming a congested botryoid or rarely few-headed panicle; involucre cylindrical-turbinate, 1.5–2 × 1–1.5 cm; phyllaries 8–9-seriate, outer ovate, 3–5 × 0.2 mm, inner progressively larger, linear-lanceolate, 0.8–1.1 × 0.1 cm, acute, gray-velutinous. Florets ca. 65, outer-corolla puberulent and trichomes glandular-stipitate; ray florets pistillate, bilabiate, 10 to 15, white, 1.2–1.5 cm long; staminodia ca. 3.5 mm long; disc florets bisexual, tubulate, rose (rarely white), 1.3–1.5 cm long; anthers 5–6 mm long; style ca. 1 cm long. Cypselae 0.9–1.3 cm long, sericeous; pappus bristles 32–42, ca. 7 mm long.

**Geographic distribution.** Minas Gerais; restricted to campos rupestres vegetation of the Serra do Cipó mountains.

*Richterago caulescens* is very close to *R. polyphylla* (Baker) Ferreyra in subshrubby leafy habit. It is possibly this characteristic that stimulated Cabrera (1971) to treat these two species as conspecific. However, *R. polyphylla*, endemic to the Planalto de Diamantina (Minas Gerais), has glaucous-tomentose leaves, with indumentum persistent on the abaxial leaf face, a peduncle 10–20 cm long, and a discoid capitulum. *Richterago caulescens*, endemic to the Serra do Cipó (Minas Gerais), has glabrous leaves, a peduncle 2.5–6 cm long, and a radiate capitulum.

*Richterago caulescens* occurs on sandy and rocky

soils among grasses, or on rocky outcrops, mostly as aggregated individuals. This species has showy ray heads and the disc florets are rose-colored, in contrast to its white ray florets.

Populations of *R. caulescens* may occur on rocky outcrops, sympatrically with *R. amplexifolia* (Gardner) Kuntze, whose distribution is also restricted to Brazil (Distrito Federal, Mato Grosso, and Minas Gerais). Under these conditions, individuals intermediate between these two species were observed. These intermediate individuals have a habit similar to *R. caulescens*, but they are more vigorous plants and possess ray or discoid heads. In this work, these specimens have been considered as hybrids.

**Paratypes.** BRAZIL. **Minas Gerais:** Santana do Riacho, Serra do Cipó, 08 Sep. 1987, Kameyama et al. CFSC 10495 (K, SP, SPF), 24 Aug. 1933, Mello Barreto 3821 (SP, SPF), 28 Jan. 1999, Melo et al. 16 (SPF), 25 July 1991, Pirani et al. CFSC 12428 (K, SPF), 17 Oct. 1992, Roque CFSC 12992, 12994 (K, SPF), 28 Sep. 1998, Roque & Hervêncio 470 (SPF, US), 01 May 1993, Roque & Sakuragui CFSC 13136 (K, MO, SPF), 19 July 1992, Roque & Sano CFSC 12963 (SPF), 25 June 1997, Roque et al. 325 (K, SPF), 03 Sep. 1972, Semir & Sazima CFSC 3331 (UEC).

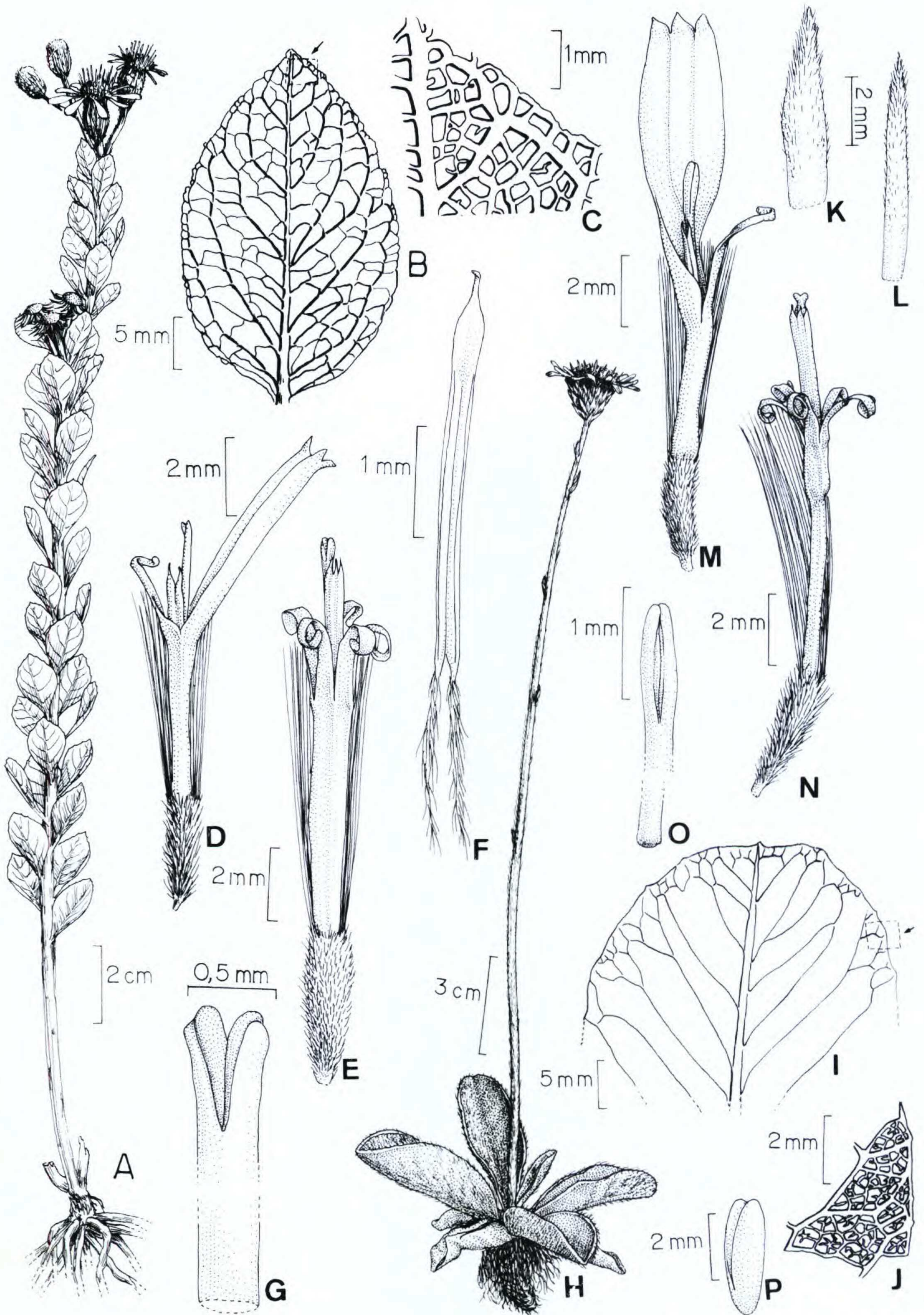
**2. *Richterago conduplicata* Roque, sp. nov.**  
TYPE: Brazil. Minas Gerais: Santana do Riacho, Serra do Cipó, ca. 22 km da base da Serra, 23 Sep. 1997, N. Roque, P. Hervêncio, A. C. Araújo 349 (holotype, SPF; isotypes, BHCB, F, HUEFS, K, RB, SP). Figure 1H–P.

Ab omnibus speciebus herbaceis rosulatis generis, foliis conduplicatis differt.

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Figure 1. A–G, *Richterago caulescens* Roque (drawn from paratype, Kameyama et al. CFSC 10495). —A. Habit. —B. Leaf venation. —C. Leaf detail from B (arrow). —D. Ray floret. —E. Disc floret. —F. Anther. —G. Style (apex)





and base). H–P, *Richterago conduplicata* Roque (drawn from holotype, Roque et al. 349). —H. Habit. —I. Leaf venation. —J. Leaf detail from I (arrow). —K. Outer phyllary. —L. Inner phyllary. —M. Ray floret. —N. Disc floret. —O. Style (apex and base). —P. Embryo.



Herbs 0.15–0.6 m tall, hemicryptophytes. Leaves rosulate, suberect, obovate, conduplicate, 3–10 × 1–4 cm, obtuse, denticulate, base rounded to slightly attenuate, hirsute adaxially, subglabrescent, trichome base persistent (manifested as dark dots), lanate abaxially, becoming velutinous, camptodromous, the veins conspicuous on the abaxial face, subsessile to petiolate, petiole to 1 cm, base expanded laterally, lanate. Inflorescence peduncle 1 (to 2), simple, rarely bifurcate, tomentose, glabrescent, bracteate; bract ovate, 0.5–1 cm long, tomentose. Capitula heterogamous, radiate, solitary; involucre hemispheric, 2–3 × 1.5–2.5 cm; phyllaries 7–8-seriate, outer ones ovate-lanceolate, 0.6–1.3 × 1–2 mm, inner ones linear-lanceolate, 1.1–1.5 × 0.5–1 mm, acute, apiculate, velutinous-lanate to sericeous, ciliate, green-vinaceous-colored. Florets 90 to 140, corolla white, externally puberulent and also with trichomes glandular-stipitate; ray florets pistillate, bilabiate, 20 to 30, striations vinaceous-colored on the abaxial face, 1.7–2.5 cm long; staminodia 5–6 mm long; disc florets bisexual, tubulate, ca. 1.4–1.7 cm long; anthers 7 mm long; style ca. 1 cm long. Cypselae 1–1.4 cm long, sericeous; pappus bristles ca. 30, 0.7–1 cm long.

*Geographic distribution.* Minas Gerais; endemic to Serra do Cipó.

*Richterago conduplicata* is very close to *R. radiata* (Vellozo) Roque in its habit, and they traditionally have been placed in the same typological species concept (Roque & Pirani, 1997). However, *R. conduplicata* has patent, obovate to conduplicate leaves that are not adpressed in the soil surface; *R. radiata* has adpressed patent, flat and orbicular leaves. Another distinguishing character is the number of peduncles per individual: in *R. radiata* it varies from 1 to 7, while in *R. conduplicata* it is mostly 1, although two specimens (Roque et al. 316 and Roque et al. 349) were observed as having 2.

On Serra do Cipó, both *R. conduplicata* and *R. radiata* are found in similar environments. Although their populations are not fully sympatric, they grow quite close to one another yet remain distinct. *Richterago conduplicata* has a widespread distribution, occurring on sandy or rocky soils (along the road to the Usina Dr. Pacífico Mascarenhas) or on rock outcrops (near Estátua do Velho Juca and Alto do Palácio). In contrast, *R. radiata* occurs in wetter areas such as grasslands, which become boggy during the rainy season, and it can be near rock outcrops.

A phenological study of 10 individuals of *R. conduplicata* was undertaken from September 1992 to August 1993. In September, 90% of these individ-

uals were in anthesis. In October, these same 90% were dispersing fruits. By November, this value had decreased to 40%, and it continued to decline until March, when the entire population was verified as being in the vegetative stage. In August of 1993, the area was burned.

During the dry season, many areas of the campos rupestres are swept by fire, often started to improve pasturage, though natural fires must also occur. Adaptations to withstand fire are therefore also at a premium (Harley, 1995).

Differing from other herbaceous species, *R. conduplicata* maintains its older dried leaves under its new leaves. In this way, the shoot apex remains elevated, to 3 cm above the soil surface, in a position that protects the apical meristem against water loss, burning, or excess heat during the passage of fire.

*Paratypes.* BRAZIL. **Minas Gerais:** Santana do Riacho, Serra do Cipó, 14 Apr. 1998, Melo & Vita 9 (SPF), 30 May 1991, Pirani et al. CFSC 12324 (K, MO, SPF), 19 July 1992, Roque & Sano CFSC 12959 (K, SPF), 01 May 1993, Roque & Campos CFSC 13132 (K, SPF), 04 July 1996, Souza, V. C. et al. 11652 (ESA), 24 June 1997, Roque et al. 316 (K, SPF), 24 Sep. 1997, Roque et al. 355 (K, SPF), 29 Sep. 1998, Roque & Hervêncio 475 (SPF, US), 30 Sep. 1998, Roque & Hervêncio 502 (SPF, US), 30 Apr. 1972, Semir & Sazima CFSC 1996 (UEC).

**3. *Richterago elegans*** Roque, sp. nov. TYPE: Brazil. Minas Gerais: Diamantina, estrada Diamantina–Conselheiro Mata (MG-220), ca. de 3 km do Córrego das Pedras, 03 Oct. 1997, A. Rapini, M. L. Kawasaki & R. Mello-Silva 393 (holotype, SPF; isotypes, BHCB, F, RB). Figure 2.

Inter aliis speciebus suffruticosis generis foliis, anguste ellipticis (usque 1 cm latis) insignis.

Subshrubs to 0.9 m, chamaephytes. Leaves alternate, lax or internodes very short, coriaceous, plane when young, elliptic, oblong and ultimately conduplicate, linear, 3–9 × 0.3–0.5 cm (to 1 cm broad when plane), acute, apiculate, entire to denticulate on the apical third, attenuate, glaucous-sericeous with glandular-stipitate trichomes, glabrescent, camptodromous, reticulate on both faces, subsessile, petiole to 3 mm, base expanded laterally, lanate. Inflorescence peduncle simple to branched, to 0.5 m, cinereous-lanate, glabrescent, bracteate; bracts ovate to linear, 1.5–20 × ca. 1 mm. Capitula heterogamous, radiate, rarely inconspicuously radiate, 1 to 4, solitary or normally arranged in a few-headed panicle; involucre cylindrical-turbinate, 1.5 × 0.7–1 cm; phyllaries 10- to 11-seriate, outer ovate, 1.5–3 × 0.5 mm, inner pro-



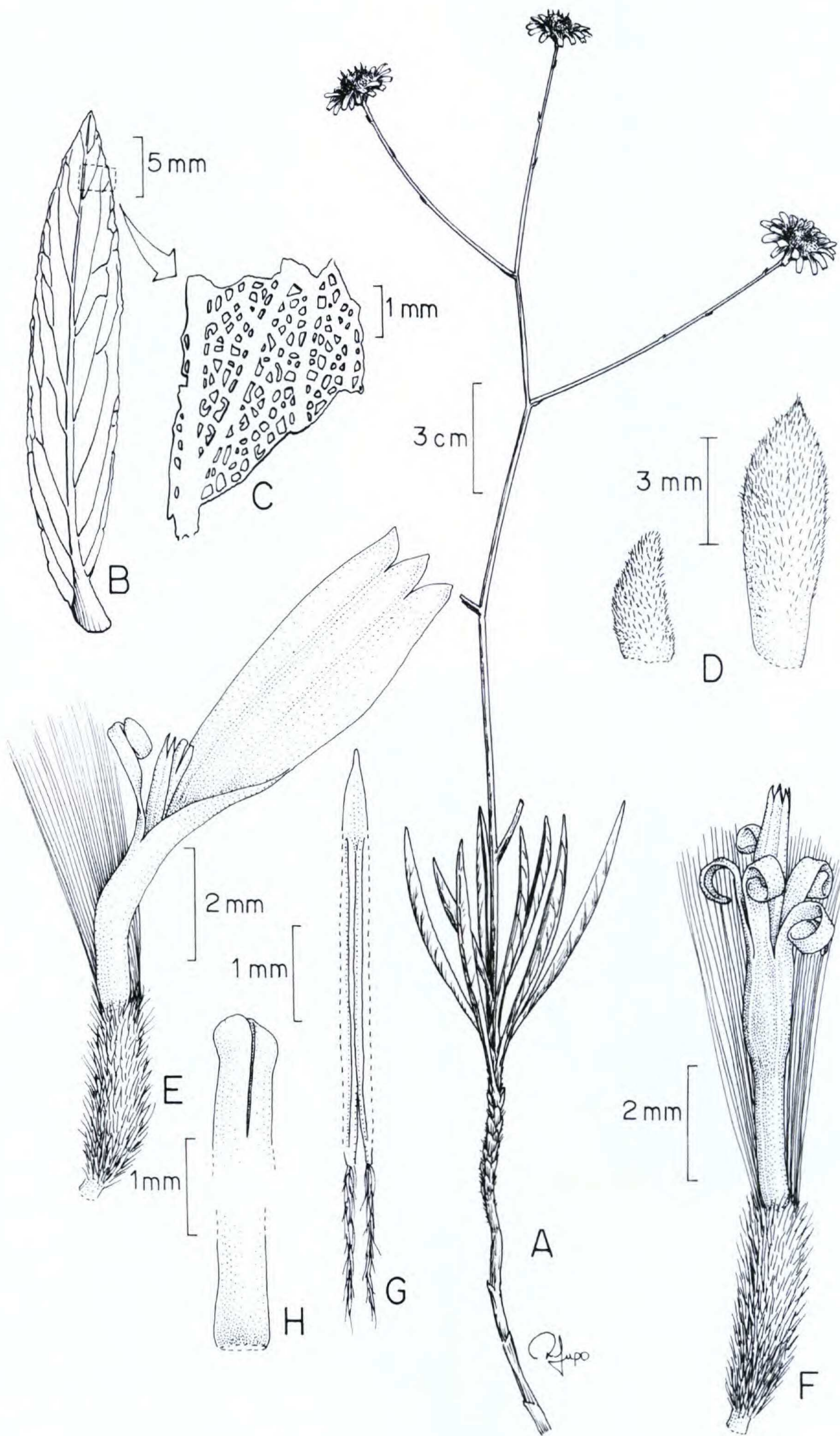


Figure 2. *Richterago elegans* Roque (drawn from paratype, Harley et al. 25433). —A. Individual with lower leaves removed. —B. Leaf venation. —C. Leaf detail from B (arrow). —D. Phyllaries. —E. Ray floret. —F. Disc floret. —G. Anther. —H. Style (apex and base).



gressively bigger, lanceolate,  $6-9 \times 1$  mm, acute, acuminate, sericeous, glabrescent, green to vinaceous-colored. Florets 40 to 56, corolla white, externally puberulous and trichomes glandular capitate; ray florets pistillate, bilabiate, 10 to 15, deciduous or not, striations vinaceous-colored on abaxial ligule face, 1–1.6 cm long, staminodia ca. 3.5 mm long; disc florets bisexual, tubulate, ca. 1–1.3 cm long, anthers ca. 4–4.5 mm long, style vinaceous-colored, 8 mm long. Cypselae ca. 8 mm long, sericeous; pappus bristles 30 to 36, ca. 5 mm long.

*Geographic distribution.* Minas Gerais; restricted to the Diamantina Plateau.

*Richterago elegans* is characterized by its subshrubby habit, alternate leaves, stem with very short internodes, and capitula that are predominantly radiate and arranged in a few-headed panicle.

*Richterago elegans* is endemic to campo rupestre vegetation in the Planalto de Diamantina, Minas Gerais. Specimens were collected in grasslands with sandy soils that are flooded during the rainy season.

*Richterago elegans*, just as *R. campestris* and *R. petiolata* (Roque, 2001), presents variation in capitulum type. Most individuals are conspicuously radiate, but some were collected with a discoid capitulum.

*Paratypes.* BRAZIL. **Minas Gerais:** Diamantina, 30 Oct. 1981, *Giulietti et al. CFCR 2339, 2367, 2388* (K, SPF, UEC), 30 Oct. 1988, *Harley et al. 25433* (K, SPF), 16 July 1996, *Roque et al. 294* (SPF), 08 Dec. 1997, *Roque et al. 402* (K, SPF), 08 Dec. 1997, *Roque et al. 403* (MO, SPF), 11 Feb. 1998, *Sano et al. 811* (SPF), 23 Sep. 1994, *Splett 621* (UB); Gouveia, 06 Sep. 1971, *Hatschbach 27310* (HB, MBM, RB), 14 Sep. 1985, *Hatschbach & Zelma 49662* (MBM), 20 Mar. 1987, *Hatschbach et al. 51149* (MBM); Santana de Pirapama, 22 Mar. 1982, *Pirani et al. CFCR 8063* (SP, UEC); Serro, 20 July 1987, *Zappi et al. CFCR 11121* (SPF).

**4. *Richterago lanata*** Roque, sp. nov. TYPE: Brazil. Minas Gerais: Santana do Riacho, Serra do Cipó, encosta da Serra da Salitreira, ca. 3 km MG 010, 26 June 1997, *N. Roque, P. Hervêncio & F. A. Vitta 329* (holotype, SPF; isotypes, K, RB). Figure 3A–G.

Ab omnibus speciebus herbaceis rosulatis generis foliis, oblanceolatis dense lanatis demum lanuginosis, floribus radii parvis optime distincta.

Herbs to 70 cm, hemicryptophytes. Leaves rosulate, coriaceous, erect, plane, oblanceolate, rarely elliptic,  $12-23 \times 2.5-5$  cm, acute to obtuse, mucronulate, entire, intramarginal vein present, atten-

uate, both surfaces densely white-lanate when young, later cinereous-lanuginous, craspedodromous, inconspicuously veined, subsessile to petiolate, petiole to 5 cm, base expanded laterally, lanate. Inflorescence peduncle 1 to 4, simple, cinereous-lanate, bracteate; bracts elliptic, ovate-lanceolate,  $1.1-8 \times 0.6$  cm, lanate. Capitula heterogamous, radiate, solitary; involucre spherical when closed and hemispheric in anthesis,  $3-4 \times 2-2.5$  cm, cinereous-lanate; phyllaries 11- to 15-seriate, subequal, outer ovate-lanceolate,  $1.3-1.9 \times$  ca. 0.3 cm, inner linear-lanceolate,  $12-15 \times$  ca. 1 mm, acuminate, lanate. Florets ca. 80, corolla white, externally pubescent; ray florets pistillate, bilabiate, 10 to 15, apex vinaceous-colored on the abaxial face, 1.6–1.9 cm long, staminodia ca. 4 mm long; disc florets bisexual, tubulate, 1.6–2.0 cm long; anthers ca. 6 mm long; style 1.1–1.2 cm long. Cypselae 1.2–1.7 cm long, sericeous; pappus bristles ca. 30, 0.9–1.3 cm long.

*Geographic distribution.* Minas Gerais; endemic to Serra do Cipó.

*Richterago lanata* was formerly included in the circumscription of *R. arenaria* (Baker) Roque (Roque, 1997). These two species are the only ones in the genus that have leaves covered by white-lanate indumentum and craspedodromous venation with an intramarginal vein. However, *R. lanata* is characterized by clumped individuals, a vigorous habit (more than *R. arenaria*), and leaves erect in relation to the peduncle, white-lanate leaves, later becoming cinereous-lanuginous, entire, and opaque with faint venation. *Richterago arenaria* tends to grow as isolated individuals, with a lanate indumentum that is lost when mature and usually with denticulate leaf margins.

The capitulum of *R. lanata* is subglobose in bud, becoming diametrically expanded during anthesis. The ray florets are not showy as compared to the species from this group (*R. polymorpha*, *R. radiata*, *R. arenaria*). However, it has been observed that these florets emit a strong sweet smell at anthesis, which is probably important in attracting pollinators. This character is not well known in other species.

*Richterago lanata* has been found in the campo rupestre vegetation, among rocks, in sandy to rocky soils along roadsides, and in the fissures of small rock outcrops (Serra da Salitreira).

*Paratypes.* BRAZIL. **Minas Gerais:** Congonhas do Norte, Serra da Carapina (Serra Talhada), Norte da Serra do Cipó, 02 Mar. 1998, *Rapini et al. 541* (K, SPF); Santana do Riacho, Serra do Cipó, 09 Oct. 1987, *Abbud et al. CFSC 10752* (MO, SPF, UEC), 16 May 1990, *Arbo et al. 4264* (K, SPF), 30 Mar. 1949, *Barroso s.n.* (BHCB



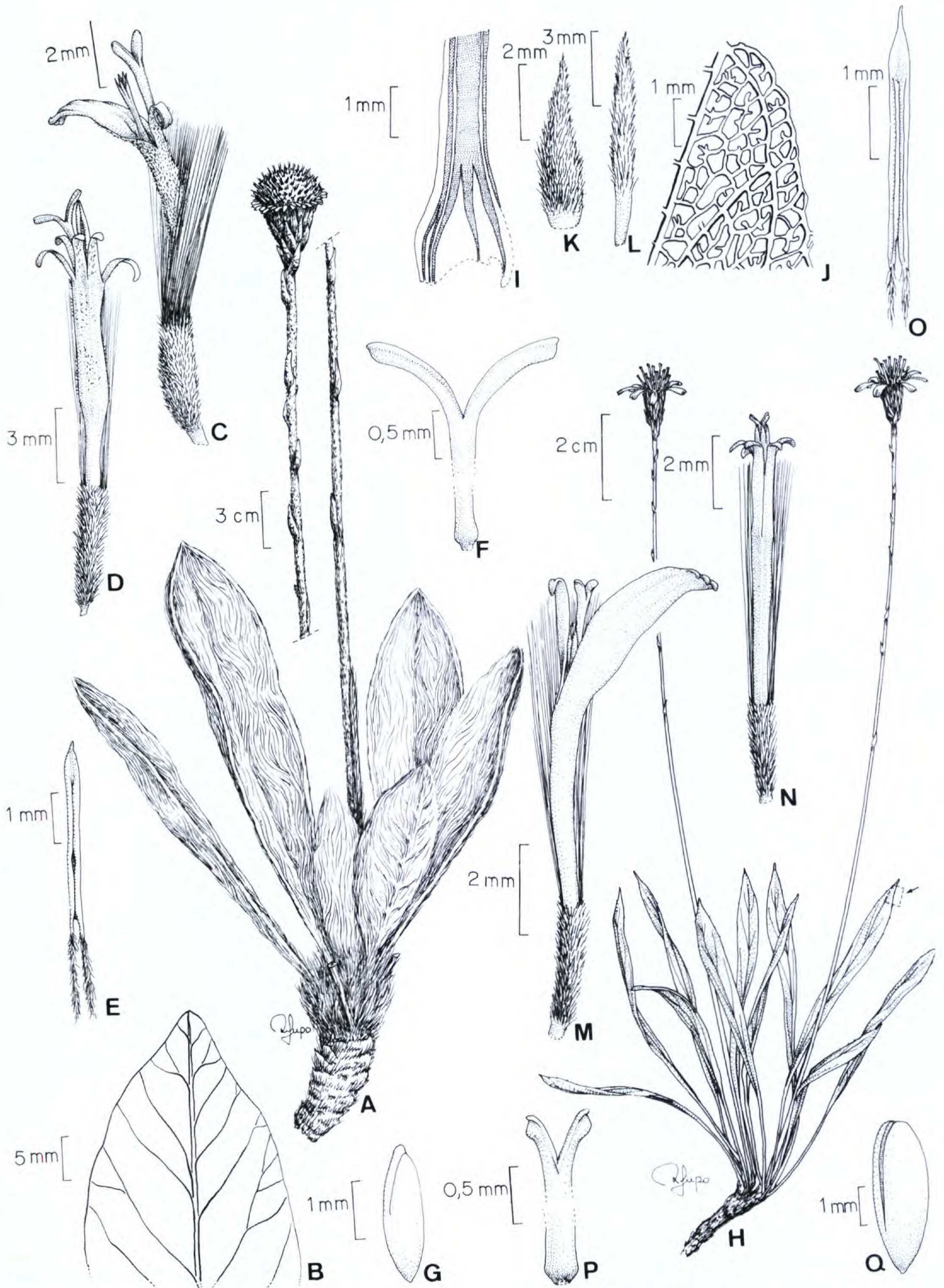


Figure 3. A–G, *Richterago lanata* Roque (A, B drawn from holotype, Roque et al. 329; C–G from paratype, Rapini et al. 541). —A. Habit. —B. Leaf venation. —C. Ray floret. —D. Disc floret. —E. Anther. —F. Style (apex and base). —G. Embryo. H–Q, *Richterago riparia* Roque (H, K–Q drawn from holotype, Roque & Hervêncio 493; I from paratype, Hatschbach 29986; J from paratype, Hatschbach 30046). —H. Habit. —I. Petiole base cleared to show vascular strands. —J. Leaf detail from H (arrow). —K. Outer phyllary. —L. Inner phyllary. —M. Ray floret. —N. Disc floret. —O. Anther. —P. Style (apex and base). —Q. Embryo.



376), 15 Mar. 1962, *Duarte 6462* (RB), 06 Mar. 1972, *Joly et al. CFSC 1251* (UEC), 25 Apr. 1978, *Lima 362* (RB, SP, UEC), 31 Jan. 1980, *King & Almeda 8387* (UB, US), 14 Apr. 1998, *Melo & Vitta 5* (SPF), 27 Jan. 1999, *Melo et al. 12* (SPF), 17 Oct. 1992, *Roque CFSC 12998* (SPF), 08 Aug. 1993, *Roque & Campos CFSC 13347* (K, SPF), 30 Sep. 1998, *Roque & Hervêncio 497* (SPF, US), 14 Feb. 1996, *Roque et al. 179* (SPF), 23 Oct. 1997, *Sano et al. 654* (K, SPF), July, *s. coletor s.n.* (RB).

**5. *Richterago riparia*** Roque, sp. nov. TYPE: Brazil. Minas Gerais: Santana do Riacho, Parque Nacional da Serra do Cipó, km 107.5 da Estrada Belo Horizonte–Conceição do Mato Dentro, 30 Sep. 1998, *N. Roque & P. Hervêncio 493* (holotype, SPF; isotypes, BHCB, F, MBM, NY, UB, US). Figure 3H–Q.

Ab omnibus speciebus herbaceis rosulatis generis caule prostrato rhizomatoso, foliis interdum alternatis oblanceolatis ad spatulatis differt.

Caespitose herbs 12 to 30 cm, hemicryptophytes; stem prostrate, rhizomatous, to 10 cm. Leaves rosulate or alternate with very short internodes, chartaceous, erect, plane, opaque, oblanceolate to spatulate, 2.5–12 × 0.2–1(1.4) cm, apex acute, callous (rarely obtuse), acuminate, margin entire or denticulate on apical third, attenuate, pubescent when young, glabrescent, trichome bases persistent (as dark dots), camptodromous, inconspicuous venation, subsessile to petiolate, petiole to 6 cm, base expanded laterally, lanate. Inflorescence peduncle simple or branched (2 or more), villous, glabrescent, bracteate; bracts lanceolate to linear, 0.2–1 cm, glabrescent. Capitula 1 to 3, heterogamous, radiate, solitary or arranged in a few-headed panicle; involucre cylindrical-turbinate, 1–1.5 cm diam., vinaceous-green-colored; phyllaries 7–9-seriate, lanceolate, outer 3–4 × 0.5 mm, inner 8–9 × 0.5 mm, acute, sericeous, glabrescent. Florets 40 to 68, corolla white, externally puberulous and with glandular-stipitate trichomes; ray florets bilabiate, 10, ca. 1.4 cm long; staminodia 3 mm long; disc florets pistillate, tubulate, 1.2 cm long; anthers 5 mm long; style 9 mm long. Cypselae ca. 1 cm long, sericeous; pappus bristles 25 to 27, ca. 8 mm long.

*Geographic distribution.* Minas Gerais; campo rupestre vegetation in the Serra do Cipó mountains, also known from Carmo do Rio Claro.

*Richterago riparia* is frequent on Serra do Cipó growing in rock cracks, along the edges of the streams, and in shady places. Recently, a major population was encountered bordering a temporarily dry stream. These individuals were densely aggregated as well as in clumps along the edge of the stream, forming a green carpet. Some clumps were

located in low spots along the border of the stream, and so were probably covered by water during the rainy season. Even during the dry season these clumps had moist roots, for they grew in dense humus material, resembling peat.

The leaves of *R. riparia* are chartaceous, flat, oblanceolate to spatulate, opaque, denticulate in the apical third, with inconspicuous venation. The species is close to *R. angustifolia*, *R. hatschbachii* (Zardini) Roque, and *R. stenophylla* (Cabrera) Roque, which are delicate herbs whose inflorescences are arranged in few-headed panicles and whose capitula have 10 ray florets. However, these species are easily distinguished from *R. riparia* by their leaf morphology: *R. angustifolia* has coriaceous leaves that are commonly involute, oblanceolate, with the apex and base callous with conspicuous venation; *R. hatschbachii* presents oblong-spatulate leaves that are flat and denticulate; and *R. stenophylla* has narrow-linear leaves.

*Paratypes.* BRAZIL. **Minas Gerais:** Carmo do Rio Claro, 05 Sep. 1961, *Andrade 1016 & Emmerich 977* (HB, RB); Santana do Riacho, Serra do Cipó, 18 May 1983, *Andrade et al. 1430* (BHCB), 26 July 1989, *Anjos 108* (BHCB, UEC, US), 01 Feb. 1987, *Barros 1285* (SP), 02 May 1993, *Barros 2816* (SP, SPF), 07 Sep. 1980, *Forero et al. 8012* (SP, SPF), 01 July 1981, *Giulietti et al. CFSC 7423* (SP, SPF, UEC), 06 Aug. 1972, *Hatschbach 29986* (BR, MBM, US), 07 Aug. 1972, *Hatschbach 30046* (MBM, NY), 07 June 1970, *Joly et al. CFSC 291* (UEC), 28 July 1991, *Luque & Menezes 12* (SPF), 26 July 1972, *Menezes 255* (RB, SPF), 29 May 1991, *Pirani et al. CFSC 12379* (SPF), 07 Nov. 1991, *Prado 25658* (UEC), 29 Apr. 1973, *Semir et al. CFSC 4064* (UEC), 30 Sep. 1977, *Tenório 77–1433* (MBM, US), 09 Sep. 1987, *Zappi et al. CFSC 10555* (MO, SPF).

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